

THE RESPONSE OF BLOOD-LILY, *SCADOXUS MULTIFLORUS* SSP *KATHERINAE*, TO DAYLENGTH, SHADE, AND OTHER PRODUCTION VARIABLES

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Abstract. Geophyte production in Miami-Dade nurseries, in USDA Plant Hardiness Zones 10 and 11, is limited mainly to tropical and subtropical species, including *Crinum*, *Hippeastrum*, *Hymenocallis*, *Agapanthus*, several “elephant-ears,” and a few others. Several studies were initiated in 1995, in Fort Lauderdale and Homestead, to determine the production potential of blood-lily, *Scadoxus multiflorus* spp *katherinae*, as a blooming-pot-plant crop for South Florida nurseries. Because this species has been little studied, limited information is available. Studies were conducted to determine the effects of the percentage of shade and length of the daily light/dark period on production and timing of the crop. The potential for early and late forcing were also investigated.

Nursery growers are constantly seeking new crops that are easy to produce, popular, and yield good profits. Geophytes (herbaceous plants with underground storage organs) are among the easiest flower crops to force (bloom on a schedule), are always popular, and can be very profitable. In Miami-Dade County, the geophytes produced are mostly tender, including species of *Crinum*, *Hymenocallis*, *Hippeastrum*, *Agapanthus*, “elephant-ears” (*Alocassia*, *Colocassia*, *Caladium* and *Xanthozoma*), ginger (*Hedychium*, *Alpinia*, *Costus*, *Curcuma*, *Kamferia*), *Eucharis* × *amazonica*, and a few others. There is great potential for the production and local sale of less-known geophytic plants.

Blood-lily (*Scadoxus multiflorus* spp *katherinae*) is a native of south and east Africa, found where tropical conditions prevail, so they have no chilling requirement. *Scadoxus* can be distinguished from the closely-related species *Haemanthus* by three easy-to-see characteristics. In *Scadoxus*, the foliage is two-ranked; in *Haemanthus*, foliage is whorled. Bracts in *Scadoxus* are small and papery; in *Haemanthus*, they are large, highly-colored, and often showy. The inflorescence in *Scadoxus* is globe-shaped; in *Haemanthus* the inflorescence resembles a shaving-brush.

Blood-lilies perform well in South Florida (dry winters, heavy summer rainfall), thriving with little or no assistance from man. However, they are rarely seen in gardens, and are not produced in local nurseries. Dutch bulbs are available

through bulb dealers, usually from February through April, and cost between \$1 and \$1.50 each, wholesale. Packaged, dry bulbs are sold at large, mass-market “home” stores at \$4 to \$6 per bulb.

Garden performance is good, and the flower display is spectacular. They behave as true perennials, having survived and re-bloomed for us for the past nine years. Growing conditions have included afternoon shade and a light organic mulch. We have found that if the bulbs are disturbed, they often fail to bloom the following year. In South Florida, blood-lilies are briefly deciduous during February and March, and flower-stalks emerge 4 to 6 weeks after the foliage has completely dried down. The new foliage usually appears as the flowers are finishing, but a few bulbs will produce foliage with the flowers. The foliage is showy and persists throughout the summer, fall, and early winter. Grown as a single bulb in a 1 gal pot, they draw immediate attention when in bloom. This is a flowering pot-plant that is easy to sell.

This study was initiated to determine some of the basic parameters for the production of blood-lilies as flowering pot-plants; specifically, to determine the optimum percentage of shade, the production time from planting the bulbs to a saleable stage, and whether time of bloom could be controlled by manipulating the light/dark period.

The substrate and pots were those used for other plants in the cooperating nurseries, and pots were placed in existing shade structures and a full-sun growing area.

Results and Discussion

Effects of shade. Plants were produced in 30% shade, 80% shade, and full sun. The plants grown under 30% shade produced richly-colored flowers, the foliage was a good green, and the foliage was self-supporting (Fig. 1). The plants grown under 80% shade produced flowers with the richest color, but the inflorescence stalks and foliage were stretched, too tall for their pots, and many fell over when the pots were handled (Fig. 2). Compared to plants from the shade treatments, flowers on plants grown in full sun were poorly colored, and the foliage was pale and short (Fig. 3). Of the three shade levels tested, 30% shade appears to be the best.

Production time. Bulb dealers market blood-lily bulbs as “blooming size,” without listing their size. Because bulbs in the shipment used in this study varied in size from 2 to 4 inches in diameter, several were cut to compare flower development in bulbs of different sizes. Even the smallest bulbs had well-developed inflorescences, so the sales claim is true. The largest and smallest bulbs were removed from the shipment, then those used in this study were selected at random. The out-sized bulbs were planted separately for observation. Though no data were collected, it was clear that larger bulbs produce larger inflorescences and leaves, and that bulb size does not affect production time.

Experience has shown that individual bulbs vary widely in the time from planting to bloom (from 4 to 8 weeks), and that landscape plantings behave similarly, even after several years in the ground. That trend was true in this study. From any lot

Parts of this study were conducted at My Too Sprouts Nursery and Rose River Nursery, Homestead, and at the USDA National Germplasm Repository, Miami.

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Fig. 1. *Scadoxus*, grown in 30% shade.



Fig. 3. *Scadoxus*, grown in full sun.



Fig. 2. *Scadoxus*, grown in 80% shade.

of bulbs, all planted at the same time and grown under the same conditions, it will be necessary for the producer to select individual pots for sale as they reach the desired stage of

bloom. The marketing period is therefore spread over several weeks, which can present both advantages and disadvantages.

Manipulating the time of bloom. It would be good to extend the production season by forcing blood-lilies both earlier and later than their natural season. In previous years, in an effort to produce an early crop of blood-lilies, bulbs were planted at weekly intervals beginning as early as bulbs could be obtained. It was found that early planting offered little advantage. Most of the bulbs planted earlier bloomed at the same time as bulbs planted later, and bulbs held in storage past late April presented additional problems. Experience has shown that holding bulbs in dry storage for later planting results in short scapes, with many too short to market. Additionally, the longer bulbs are held, an increasing percentage fail to bloom.

As reported in more detail in the 2004 *Proceedings*, increasing the length of the daily light period advanced bloom somewhat. As the light period was increased from 6 to 12 h, bulbs came into bloom as much as two weeks early.

Based on nine years of trials, blood-lilies can be produced in South Florida as flowering pot-plants, but a number of production practices need further study. In particular, research is needed on the manipulation of the flowering period and the time required for forcing.